

WHAT IS CLAIMED IS:

- Sub a5/1. A balloon catheter assembly comprising:
- a first tubular member having a proximal portion and a distal portion with a lumen extending the length therein;
  - a discreet length of tie layer insert disposed over a portion of the distal segment of the first tubular member; and
  - a balloon having a proximal portion, a distal portion and an expandable region therebetween, wherein at least one of the proximal portion or the distal portion of the balloon is affixed to the discreet length of tie layer.
2. The balloon catheter assembly of claim 1, wherein a second tubular member is disposed within the lumen of the first tubular member and includes a distal portion extending distally beyond the first tubular member with the proximal portion of the balloon affixed to the distal portion of the first tubular member and the distal portion of the balloon is affixed to the distal portion of the second tubular member.
3. The balloon catheter assembly of claim 2, wherein the first tubular member is disposed within at least a portion of a second tubular member having a distal portion terminating proximal of a distal end of the first tubular member with the proximal portion of the balloon affixed to the distal portion of the second tubular member and a distal portion of the balloon affixed to the distal portion of the first tubular member.

4. A balloon catheter comprising:

a first tubular member having a lumen extending the length therein;

a second tubular member coaxially disposed within at least a portion of the first tubular member with a distal segment extending distally beyond a distal end of the first tubular member;

a tie layer insert disposed over a portion of the distal segment of the second tubular member; and

a balloon having a proximal portion, a distal portion and an expandable region therebetween, the expandable region of the balloon being in fluid communication with the lumen of the first tubular member, further wherein at least a portion of the proximal portion of the balloon is affixed to the first tubular member and at least a portion of the distal portion of the balloon is affixed to the tie layer.

5. The balloon catheter of claim 4, wherein the balloon is manufactured from polyether block amide.

6. The balloon catheter of claim 5, wherein the second tubular member is manufactured from high density polyethylene.

7. The balloon catheter of claim 4, wherein the first tubular member and the second tubular member extend co-axially over substantially the entire length of the balloon catheter.

8. The balloon catheter of claim 4, wherein the material of the tie layer insert has a bonding affinity with both the first tubular member and the second tubular member.

9. The balloon catheter of claim 8, wherein the tie layer insert is manufactured from linear low density polyethylene.

10. The balloon catheter of claim 4, wherein the tie layer insert has more than one layer.

Sub a77 11. A balloon catheter comprising:  
a first tubular member having a lumen extending the length therein;  
a second tubular member coaxially disposed within at least a portion of the first tubular member with a distal segment extending distally beyond a distal end of the first tubular member;  
a polymeric insert disposed over and affixed to only a portion of the distal segment of the second tubular member; and  
a balloon having a proximal portion, a distal portion and an expandable region therebetween, the expandable region of the balloon being in fluid communication with the lumen of the first tubular member, further wherein the proximal portion of the balloon is affixed to the first tubular member at a first attachment site and the distal portion of the balloon is affixed to the polymeric insert at a second attachment site.

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12. The balloon catheter of claim 11, wherein the balloon is manufactured from polyether block amide.

13. The balloon catheter of claim 12, wherein the second tubular member is manufactured from high density polyethylene.

14. The balloon catheter of claim 11, wherein the polymeric insert is cylindrical in shape.

15. The balloon catheter of claim 14, wherein the polymeric insert comprises more than one layer.

16. The balloon catheter of claim 14, wherein the polymeric insert is manufactured from a functional polymer.

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17. A balloon catheter comprising:  
a first tubular member having a lumen extending the length therein;  
a second tubular member coaxially disposed within at least a portion of the first tubular member with a distal segment extending distally beyond a distal end of the first tubular member;  
a polymeric insert disposed over at least a portion of the distal segment of the second tubular member; and

a balloon having a proximal balloon waist, a distal balloon waist and an expandable region therebetween, the balloon further comprising a polymeric material having a bonding affinity with both the first tubular member and the polymeric insert while lacking a bonding affinity with the second tubular member, further wherein the proximal balloon waist of the balloon is affixed to the first tubular member and the distal balloon waist of the balloon is affixed to the polymeric insert.

Sub 107 18. The balloon catheter of claim 17, wherein the balloon is manufactured from polyether block amide.

19. The balloon catheter of claim 18, wherein the second tubular member is manufactured from high density polyethylene.

20. The balloon catheter of claim 17, wherein the polymeric insert comprises more than one layer.

21. The balloon catheter of claim 20, wherein the polymeric insert comprises linear low density polyethylene.

Sub 117 22. A process for improved bonding between an expandable balloon and a catheter shaft, the process comprising the steps of:

providing a catheter shaft having an outer tubular member and an inner tubular member, wherein the inner tubular member has a proximal end, a distal end and a lumen

extending therein, and further wherein the inner tubular member is coaxially disposed within at least a portion of the outer tubular, with a portion of the inner tubular member extending distally beyond the distal end of the outer tubular member;

providing a polymeric insert;

disposing the polymeric insert over a portion of the inner tubular member extending distally beyond the distal end of the outer tubular member;

providing an expandable balloon having a first end, a second end and an expandable region therebetween;

affixing the first end of the expandable balloon to a portion of the outer tubular member; and

affixing the second end of the expandable balloon to a portion of the polymeric insert.

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